ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9404130022 DOC.DATE: 94/03/31 NOTARIZED: NO DOCKET #
FACIL:50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga 05000275
AUTH.NAME AUTHOR AFFILIATION
SISK,D.P. Pacific Gas & Electric Co.
FUJIMOTO,W.H. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-002-00:on 940315,loss of temporary control room annunicator sys occurred.Caused by personnel error. Connectors verified,controlled work area extended & addl supervisory personnel assigned.W/940331 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 8
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PDIV-3 PD	1	1	PETERSON,S	1	1
INTERNAL:	ACRS	1	1	AEOD/DOA	1	1
	AEOD/DSP/TPAB	1	1	AEOD/ROAB/DSP	2	2
	NRR/DE/EELB	1	1	NRR/DE/EMEB	1	1
	NRR/DORS/OEAB	1	1	NRR/DRCH/HHFB	1	1
	NRR/DRCH/HICB	1	1	NRR/DRCH/HOLB	1	1
	NRR/DRIL/RPEB	1	1	NRR/DRSS/PRPB	2	2
	NRR/DSSA/SPLB	1	1	NRR/DSSA/SRXB	1	1
	REG FILE 02	1	1	RES/DSIR/EIB	1	1
	RGN4 FILE 01	1	1			
EXTERNAL:	EG&G BRYCE,J.H	2	2	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY,G.A	1	1
	NSIC POORE,W.	1	1	NUDOCS FULL TXT	1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
TOTAL NUMBER OF COPIES REQUIRED: LTTR 28 ENCL 28

RIDS/ADDS RIDS/ADDS

Pacific Gas and Electric Company

Nuclear Technical Services A10C
333 Market Street, Room 8024
P.O. Box 770000
San Francisco, CA 94177
415 973 0601
Fax 415 973 1427

Warren H. Fujimoto
Vice President

March 31, 1994

PG&E Letter No. DCL-94-068

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-94-002-00 (Voluntary)
Loss of Temporary Control Room Annunciator Due to Personnel Errors

Gentlemen:

PG&E is submitting the enclosed voluntary licensee event report concerning the loss of temporary control room annunciator due to personnel errors. This report is submitted for information purposes only as described in Item 19 of Supplement 1 to NUREG-1022.

This condition did not affect the health and safety of the public.

Sincerely,

Warren H. Fujimoto

cc: Mary H. Miller
Kenneth E. Perkins
Sheri R. Peterson
Diablo Distribution
INPO

DC1-94-TI-N007

Enclosure

1177S/DDM/2246

IE22
1/1

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
DIABLO CANYON UNIT 1	0 5 0 0 0 2 7 5	1 OF 7

TITLE (4) LOSS OF TEMPORARY CONTROL ROOM ANNUNCIATOR DUE TO PERSONNEL ERRORS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MON	DAY	YR	YR	SEQUENTIAL NUMBER	REVISION NUMBER	MON	DAY	YR	FACILITY NAMES	DOCKET NUMBER (8)
03	15	94	94	- 0 0 2 -	0 0	03	31	94		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	6
POWER LEVEL (10)	0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)

____ 10 CFR ____

_X_ OTHER - VOLUNTARY REPORT

(Specify in Abstract below and in text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER AREA CODE	TELEPHONE NUMBER
DAVID P. SISK - SENIOR REGULATORY COMPLIANCE ENGINEER	805	545-4420

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
| | YES (if yes, complete EXPECTED SUBMISSION DATE)	| X | NO				

ABSTRACT (16)

This voluntary LER is submitted for information purposes only as described in Item 19 of Supplement 1 to NUREG-1022.

On March 15, 1994, at 1311 PST, with Unit 1 stable in Mode 6 (Refueling), a loss of the temporary control room annunciator system capability was identified by control room operators. Plant operators immediately implemented pre-planned compensatory measures to manually monitor plant systems and equipment by stationing additional operators. The temporary control room annunciator was returned to service within approximately 31 minutes.

On March 26, 1994, at 1416 PST, with Unit 1 in Mode 6, defueled, a loss of the temporary control room annunciator occurred due to a maintenance console input error. The system was restored within three minutes.

The root cause of these events was personnel error.

Corrective actions for these events include verification of all connectors, extension of the controlled work area, assignment of additional supervisory personnel, issuance of an operations standing order regarding compensatory actions and incorporation of the "lessons learned" into next scheduled quarterly I&C training session.

I. Plant Conditions

Unit 1 was in Mode 6 (Refueling) at 0 percent reactor power, with an average reactor coolant system (RCS)(AB) temperature of approximately 100 degrees Fahrenheit at atmospheric pressure.

II. Description of Event

A. Summary:

On March 15, 1994, at 1311 PST, with Unit 1 stable in Mode 6, with fuel not yet offloaded, a loss of the temporary control room annunciator system occurred (ANN). Licensed plant operators implemented pre-planned additional measures to monitor plant systems and equipment. The temporary control room annunciator was restored within approximately 31 minutes.

On March 26, 1994, at 1416 PST, with Unit 1 in Mode 6, defueled, the temporary control room annunciator system required reinitializing due to an incorrect maintenance console input error. The system was restored within three minutes.

B. Background:

The main control room annunciator system (ANN) is nonsafety equipment and has no specific Technical Specification requirement but is an integral part of the control room instrumentation used by plant operators to assess plant conditions. As part of a design modification to replace the main control room annunciator system, a separate temporary control room annunciator system was installed in parallel to the existing equipment prior to removal. The temporary system is composed of multiplexers, power supplies, a central computer unit (CCU), and a maintenance console in the cable spreading room immediately below the control room. A display panel (CRT), printer interface and system status monitor are located in the control room to alert operators of abnormal plant system conditions or equipment operation. This system has approximately 500 selected inputs (those needed for plant operation during the installation of the upgraded system). The system status monitor includes a tell-tale lamp that pulses proportional to the number of times the system program cycles to actively display that the system is operating normally.

C. Event Description:

Event 1:

On March 15, 1994, at 1311 PST, control room operators noted that the temporary control room annunciator monitor lamp was pulsing much slower than expected. Plant operators attempted to verify the temporary annunciator function by operating plant equipment that would result in an alarm. However, the alarm did not respond as expected. In

accordance with loss of annunciator contingency actions, additional licensed plant operators were stationed in the control room to monitor plant systems and equipment manually. Plant Instrumentation and Controls (I&C) personnel were notified, and troubleshooting efforts were initiated.

On March 15, 1994, at 1342 PST, I&C personnel identified a cable connection which was not fully engaged between the CCU and the maintenance console in the cable spreading room. The connector was properly engaged and secured with the captive screws, and the system was initialized and verified to operate satisfactorily. The CCU alarm history was downloaded to the maintenance console and reviewed to confirm that the system had recorded alarm conditions consistent with operation of plant equipment during the period when the system was degraded.

On March 15, 1994, at 1427 PST, plant operators verified the temporary control room annunciator was operating as required and discontinued manual monitoring of plant systems and equipment.

Event 2:

On March 26, 1994, at 1416 PST, I&C personnel performing a system check at the maintenance console inadvertently input an incorrect command, which caused the annunciator computer to "lock up." The system was initialized and verified to operate satisfactorily within three minutes. The CCU alarm history was downloaded to the maintenance console and reviewed to confirm that the system recorded alarm conditions consistent with operation of plant equipment during the period when the system was degraded.

D. Inoperable Structures, Components, or Systems that Contributed to the Event:

The main control room annunciator system was not available in accordance with applicable plant procedures and was being removed to install an upgraded system. The temporary control room annunciator was properly recording alarms to the CCU history file; however, the control room alarm function was degraded such that real time alarms were not being received.

E. Dates and Approximate Times for Major Occurrences:

Event 1:

1. March 15, 1994, at 1311 PST: Event Date. Plant operators visually observed a degraded condition, verified the annunciator status and implemented contingency actions.

2. March 15, 1994, at 1342 PST: The temporary control room annunciator alarm functions were restored.

3. March 15, 1994, at 1427 PST: Contingency actions to manually monitor system and equipment status were terminated.

Event 2:

1. March 26, 1994, at 1416 PST: The temporary control room annunciator required reinitializing due to an incorrect maintenance console input error.

2. March 26, 1994, at 1419 PST: The system was restored to operation.

F. Other Systems or Secondary Functions Affected:

None.

G. Method of Discovery:

Event 1:

Utility licensed plant operators visually observed a slow temporary control room annunciator monitor lamp response in the control room.

Event 2:

The data entry error and resultant annunciator computer "lock up" was immediately known by local display errors presented to the utility maintenance personnel attempting a maintenance check at the maintenance console.

H. Operator Actions:

Event 1:

Utility licensed plant operators implemented compensatory measures to manually monitor plant systems and equipment in the control room.

Event 2:

Upon notification of the momentary (three minute) loss of the temporary control room annunciator capability, control room operators verified the status of plant systems and equipment consistent with the annunciator return to service status.

I. Safety System Responses:

None.

III. Cause of the Event

A. Immediate Cause:

Event 1:

The immediate cause of this event was a partially engaged cable connector between the temporary control room annunciator computer and the local maintenance console.

The loose cable connection resulted in random signals generated at the incomplete connection, which were interpreted by the computer to be valid maintenance commands requiring a priority software action. However, since the commands were random and rapid, the computer attempted to respond to the full extent of the maintenance terminal software priority and slowed other lower priority functions accordingly. This condition resulted in loss of real time control room alarm capability.

Event 2:

The immediate cause of the event was entry of an incorrect maintenance command code at the maintenance console in the cable spreading room.

B. Root Cause:

Event 1:

The root cause of this event was personnel error (cognitive) in that utility I&C personnel involved with the installation of the temporary control room annunciator failed to secure the captive screws of the communications cable routed from the annunciator computer to the maintenance terminal.

Event 2:

The root cause of this event was personnel error (cognitive) in that an input code was incomplete prior to entering the "data entry" key command.

IV. Analysis of the Event

The main control room annunciator system is nonsafety equipment and has no specific Technical Specification requirement but is an integral part of the control room instrumentation relied upon by plant operators to assess plant conditions. A loss of the main control room annunciator priority alarms in conjunction with the alarm typewriter failure to respond to an alarm

condition is considered a degradation of control room capability to respond to emergency conditions in Operating Modes 1 through 4.

During Event 1, Unit 1 was in Mode 6 with stable plant conditions, and additional licensed plant operators were immediately stationed in the control room to manually monitor plant systems and equipment during the event.

During Event 2, the initiating cause was known and immediate action taken (in less than three minutes) to restore the annunciator capability.

Therefore, adequate control room information and operator capability to perform required mitigating actions were available throughout these events. Thus, these events did not adversely affect the health and safety of the public.

V. Corrective Actions

A. Immediate Corrective Actions:

Event 1:

1. Additional licensed plant operators were stationed to manually monitor plant systems and equipment as a contingency measure during the degraded condition.

2. The shift foreman tailboarded the system status with plant operators, management and I&C personnel regarding this event prior to securing contingency manual monitoring of plant systems and equipment.

Event 2:

1. The temporary annunciator system was reinitialized and alarm history reviewed.

2. The utility I&C maintenance technician was counseled regarding the need for accuracy when maintenance commands are entered.

B. Corrective Actions to Prevent Recurrence:

Event 1:

1. I&C personnel verified that all temporary annunciator cable connectors were properly connected with capture screws engaged and information tags placed to caution that disconnecting cables may degrade system capability.

2. The personnel exclusion work area boundary around the temporary annunciator system was increased to provide additional assurance that connectors will remain properly engaged.

3. I&C supervisory personnel have been assigned 24-hour support coverage for the annunciator replacement project to provide prompt response to any observed abnormal equipment condition.

4. An Operations Standing Order was provided to all shift crews specifying actions to be taken in the event of loss of the temporary annunciator capability.

5. The "lessons learned" from this event will be reviewed by all I&C personnel during the next regularly scheduled quarterly maintenance training seminar.

Event 2:

The "lessons learned" from this event will be reviewed by all I&C personnel during the next regularly scheduled quarterly maintenance training seminar.

VI. Additional Information

A. Failed Components:

None.

B. Previous LERs on Similar Events:

None.